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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,893

12/07/2006

Jo Klaveness

PN0398

7405

36335

7590

12/09/2009

GE HEALTHCARE, INC.

IP DEPARTMENT 101 CARNEGIE CENTER

PRINCETON, NJ 08540-6231

EXAMINER

SCHLIENTZ, LEAH H

ART UNIT

PAPER NUMBER

1618

MAIL DATE

DELIVERY MODE

12/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,893	Applicant(s) KLAVENESS ET AL.	
	Examiner Leah Schlientz	Art Unit 1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-8 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,6-8 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/4/2009 has been entered.

Status of Claims

Claim1 has been amended. Claims 2, 3, 5, 9, 10, 12 and 13 have been cancelled. Claims 1, 4, 6-8 and 11 are pending and are examined herein on the merits for patentability.

Response to Arguments

Any rejection not reiterated herein has been withdrawn as being overcome by amendment.

Applicant's arguments have been fully considered, but are moot in view of new grounds of rejection.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 4, 6-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weissleder (US 2003/0044353) in view of Cannizzaro (US 2005/0261253).

Weissleder discloses activatable imaging probes that includes a chromophore attachment moiety and one or more, e.g., a plurality of, chromophores, such as near-infrared chromophores, chemically linked to the chromophore attachment moiety so that upon activation of the imaging probe the optical properties of the plurality of chromophores are altered. The probe optionally includes protective chains or chromophore spacers, or both. Also disclosed are methods of using the imaging probes for optical imaging (abstract). For example, activatable imaging probes are disclosed that are activated by phosphorylation or

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dephosphorylation of the probe. For example, the phosphorylation can be mediated by a kinase, and the dephosphorylation can be mediated by a phosphatase. The probes can have one or more phosphorylation sites, and these sites can be, or be part of the chromophore attachment moiety, or can be within a spacer between the chromophore attachment moiety and the chromophores (paragraph 0009). Chromophores useful in the new probes include near infrared chromophores such as Cy5.5, Cy5, Cy7, IRD41, IRD700, NIR-1, IC5-OSu, LaJolla Blue, Alexafluor 660, Alexafluor 680, FAR-Blue, FAR-Green One, FAR-Green Two, ADS 790-NS, ADS 821-NS, indocyanine green (ICG), etc. (paragraph 0045). Activation of the imaging probe can be achieved through phosphorylation or dephosphorylation of the probe. Phosphorylation is mediated through enzymes such as kinases, which are abundantly involved in signal transduction and function by adding a phosphate group to either serine, threonine or tyrosine amino acids. There are a number of different types of kinases including, without limitation, receptor tyrosine kinases, the Src family of tyrosine kinases, serine/threonine kinases, and the Mitogen-Activated Protein (MAP) kinases. In addition, many of these molecules are associated with various disease states. Examples of kinases useful in the present invention and their associated diseases are listed in Table 3 (paragraph 0081). Suitable receptor tyrosine kinases include Epidermal Growth Factor Receptor (EGFR), associated with cancers of the digestive tract, breast and colorectal cancer (Table 3). The invention may be useful in detecting and evaluating cancers, and delineating tumor margins, wherein the probe is directed to tumor tissue. Detection methods include, but are not limited to, reflective devices

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such as endoscopes, cameras, infrared goggles, and operating microscopes; and diffuse optical tomographic devices. A partial list of tumors include, but are not limited to tumors of the breast, prostate, colon, bronchi, lung, brain, ovary, muscle, fat, esophagus, head and neck, skin, small bowel, stomach, liver, adrenal gland, kidneys, bladder, pancreas, bone, ureters, blood vessels, and resultant metastases to lymph nodes (paragraph 0152).

Weissleder does not specifically recite that employing a tyrosine kinase inhibitor for the tyrosine kinase of EGFR conjugated to a chromophore can be used for optical imaging lung cancer.

Cannizzaro discloses phosphorous substituted kinase inhibitory compounds (abstract). It is known that class 1 kinases such as the EGF family of receptor tyrosine kinases are frequently present in common human cancers, such as breast cancer, non-small cell lung cancer, squamous cell cancer of the lung, etc., and that is known that EGF type tyrosine kinase activity is rarely detected in normal cells, whereas it is more frequently detected in malignant cells (paragraph 0008). See also paragraphs 0009-0010. Intracellular targeting may be achieved that allow accumulation or retention of biologically active agents inside cells. The invention provides analogues of kinase-inhibitory compounds, such as disclosed in paragraphs 0030-0115. Suitable labels for use in diagnostics include fluorophores (paragraph 0578).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a known tyrosine kinase inhibitor to EGFR conjugated with chromophore in the compositions of Weissleder for providing optical imaging of lung

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cancer when the teaching of Weissleder is taken in view of Cannizzaro. Weissleder teaches that his compositions are useful for imaging diseases such as breast and colorectal cancer, but does not specifically recite lung cancer. One would have been motivated to further detect additional diseases to those recited in Table 3 of Weissleder in order to expand upon the potential uses of said compositions. For example, Cannizzaro teaches that it is well known in the art that EGF type tyrosine kinase is overexpressed in lung cancer, as well as breast and other cancers. Therefore, one of ordinary skill would have had a reasonable expectation of success in imaging lung cancer in addition to breast cancer. With regard to the specific kinase inhibitor employed in the compositions of Weissleder, one would have been motivated to select inhibitors known in the art, such as those disclosed in Cannizzaro for detecting such activity. In addition, Weissleder provides a general teaching that his compositions can be used for detecting lung cancer (paragraph 0152).

Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is (571)272-9928. The examiner can normally be reached on Monday-Tuesday and Thursday-Friday 9 AM-5 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael G. Hartley/
Supervisory Patent Examiner, Art Unit 1618

LHS